REMARKS:

Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 are currently pending in the subject Application.

Claims 2, 3, 9, 10, 16, 17, 24, 30, 36, and 42 have been previously canceled without prejudice.

Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 stand rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,047,290 to Kennedy et al. ("*Kennedy*") in view of Hillier et al., "Introduction to Operations Research" ("*Hillier*").

By this amendment, Claims 8 and 22 have been amended to clarify the Amendments made in the Amendment mailed 13 November 2006. In particular, this clarifying amendment is made to clarify that the term buffer is stricken. For example, the last four (4) lines in Claim 8 should read:

> proceeding to a next downstream buffer; and
> an order planner coupled to the database and operable to generate an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

In addition, the last three (3) lines in Claim 22 should read:

> proceeding to a next downstream buffer; and
> means for generating an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

The clarifying amendments to Claims 8 and 22 are not necessitated by any prior art and are unrelated to the patentability of the present invention. No new matter has been added.

REJECTION UNDER 35 U.S.C. § 103(a):

Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 stand rejected under 35 U.S.C. § 103(a) over *Kennedy* in view of *Hillier*.

The Applicants respectfully submit that *Kennedy* or *Hillier*, either individually, or in combination, fail to disclose, teach, or suggest each and every element of Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43. Thus, the Applicants respectfully traverse the Examiner's obvious rejection of Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 under 35 U.S.C. § 103(a) over the proposed combination of *Kennedy* and *Hillier*, either individually or in combination.

The Proposed *Kennedy-Hillier* Combination Fails to Disclose, Teach, or Suggest Various Limitations Recited in Applicants Claims

For example, with respect to independent Claim 8, this claim recites:

A system for generating a supply chain plan, comprising:
a database operable to store data describing a supply chain network comprising a plurality of buffers, each buffer being operable to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a constraint;
a linear programming optimizer coupled to the database and operable to:
generate a linear programming problem for the supply chain network;
approximate the linear programming problem by **discretizing the time variables** of the buffers to **yield a plurality of discretized time variables** and by **relaxing the constraint to yield a relaxed constraint**; and
calculate an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and **including a list of producers operable to supply the items to each buffer**; and
a heuristic solver coupled to the database and operable to adjust the optimized supply chain plan to satisfy the constraint, wherein the heuristic solver is operable to adjust the optimized supply chain plan by:
repeating the following until a last upstream buffer is reached:
selecting a buffer;
adjusting one of (a) the quantity of items at the selected buffer, and (b) at least one time value of the time variable of the selected buffer to satisfy the constraint; and
proceeding to a next upstream buffer; and
repeating the following until a last downstream buffer is reached:

selecting a buffer;

planning production to either (a) supply the items to the selected buffer at the adjusted time value, or (b) supply the adjusted quantity of items to the selected buffer; and

proceeding to a next downstream buffer; and

an order planner coupled to the database and operable to **generate an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer**. (Emphasis Added).

Independent Claims 1, 15, 22, and 23 recite similar limitations. *Kennedy* or *Hillier*, either individually or in combination, fail to disclose each and every limitation of independent Claims 1, 8, 15, 22, and 23.

The Applicants respectfully submit that *Kennedy* fails to disclose, teach, or suggest independent Claim 8 limitations regarding a "***system for generating a supply chain plan***" and in particular, *Kennedy* fails to disclose, teach, or suggest independent Claim 8 limitations regarding an "***order planner*** coupled to the database and operable to **generate an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer**." Specifically, the Examiner asserts:

The optimized supply chain is produced by upstream and downstream planning, where producers are assigned to buffers to supply the items to the buffers. A ***production plan*** is generated by associating producers with specific buffers to supply end items to consumers.

However, the Applicants were unable to find the above assertion in *Kennedy*, as alleged by the Examiner. In particular, the Applicants do not understand what ***production plan*** the Examiner is referring to, how this ***production plan*** is related to *Kennedy*, how this ***production plan*** is related to the "***order planner***", as recited in independent Claim 8, or even how this ***production plan*** is related to the subject Application.

The Applicants respectfully request clarification as to how the Examiner arrives at the above assertion. The Applicants further respectfully request the Examiner to point to the portion of Kennedy which contains the disclosure, teaching, or suggestion, as

asserted by the Examiner. The Examiner may call the undersigned, Steven J. Laureanti, at (480) 830-2700 if the Examiner believes that it would be easier to discuss the source of confusion over the phone.

The Office Action Acknowledges that *Kennedy* Fails to Disclose Various Limitations Recited in Applicants Claims

The Applicants respectfully submit that the Office Action acknowledges, and the Applicants agree, that *Kennedy* fails to disclose the emphasized limitations noted above in independent Claim 8. Specifically the Examiner acknowledges that *Kennedy* fails to disclose "that *the algorithm used for the supply chain network is a generated linear programming problem, approximating this linear programming problem by discretizing the time variables of the buffers to yield a plurality of discretized time variables and by relaxing the constraint to yield a relaxed constraint, or calculating an optimized supply chain plan for the approximated linear programming problem*." (12 December 2006 Office Action, Page 5). (Emphasis Added). However, the Examiner asserts that the cited portions of *Hillier* disclose the acknowledged shortcomings in *Kennedy*. The Applicants respectfully disagree and respectfully traverse the Examiner's rejection.

The Applicants respectfully submit that *Hillier* fails to disclose, teach, or suggest Applicants claim limitations regarding a system, method, or logic "*for generating a supply chain plan*" and in particular *Hillier* fails to disclose, teach, or suggest independent Claim 8 limitations regarding a "*linear programming optimizer coupled to the database*" operable to "*generate a linear programming problem* for the supply chain network". Rather *Hillier* merely discloses linear programming for mathematical functions. (Pages 26 and 26). In addition, although, the Examiner asserts that Hillier "specifically discloses calculating an optimized solution supply plan for the approximated linear programming problem", (12 December 2006 Office Action, Page 16), the Examiner is silent as whether *Hillier* or *Kennedy* teaches, suggests, or even hints at "*linear programming optimizer coupled to the database*" operable to "*generate a linear programming problem* for the supply chain network", as recited in

independent Claim 8. Thus, *Hillier* or *Kennedy*, either individually or in combination, cannot provide for **generating a linear programming problem** for the supply chain network, since *Hillier* does not even provide for a **linear programming optimizer coupled to a database**, in the first place.

The Applicants further respectfully submit that *Hillier* fails to disclose, teach, or suggest independent Claim 8 limitations regarding a "**linear programming optimizer coupled to the database**" operable to "**approximate the linear programming problem** by **discretizing the time variables** of the buffers to **yield a plurality of discretized time variables** and by **relaxing the constraint to yield a relaxed constraint**". In particular, it appears that the Examiner is equating "**approximat[ing] the linear programming problem**" recited in independent Claim 8 with the "**linear programming relaxation problem**" disclosed in *Hillier*. (12 December 2006 Office Action, Page 16). However, the "**linear programming relaxation problem**" disclosed in *Hillier*, merely provides for a method to check to see "whether a fortuitous outcome has occurred", and **does not include or is not even related to approximat[ing] the linear programming problem**, as recited in independent Claim 8. (Page 512, Section 1).

In response to the Applicants Arguments submitted in the Amendment mailed, 13 November 2006, the Examiner requests further clarification as to the "**linear programming relaxation problem**" disclosed in *Hillier*, which merely provides for a method to check to see "whether a fortuitous outcome has occurred". (Page 512, Section 1). In response, the Applicants respectfully submit the following explanation, to clarify the Applicants remarks in the Amendment mailed, 13 November 2006.

Specifically, *Hillier* discloses, that "it is common for an IP [integer programming] algorithm to begin by applying the simplex method to the LP [linear programming] relaxation to check whether this fortuitous outcome has occurred." (Page 512, Lines 26-28). However, "**approximat[ing] the linear programming problem**" recited in independent Claim 8 provides for **approximation** "by **discretizing the time variables** of the buffers to **yield a plurality of discretized time variables** and by **relaxing the**

constraint to yield a relaxed constraint". In addition, *Hillier* provides a "*LP* [linear programming] *relaxation*" that is the "same problems [as the corresponding linear programming problem] except that the integer restriction is deleted". However, even though the integer restriction in *Hillier* is deleted, the linear programming problem is not *approximated* "by *discretizing the time variables*". Thus, the Applicants respectfully submit that the equations forming the foundation of the Examiner's comparison between *Hillier* and independent Claim 8 cannot be made. The Applicants further respectfully submit that these distinctions alone are sufficient to patentably distinguish independent Claim 8 from *Hillier*.

The Applicants still further respectfully submit that *Hillier* fails to disclose, teach, or suggest independent Claim 8 limitations regarding a "*linear programming optimizer coupled to the database*" operable to "*calculate an optimized supply chain plan for the approximated linear programming problem*, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers operable to supply the items to each buffer". In particular, it appears that the Examiner is equating "*calculat[ing] an optimized supply chain plan*" recited in independent Claim 8 with the "*simplex method*" disclosed in *Hillier*. (12 December 2006 Office Action, Page 3). However, this "*simplex method*" disclosed in *Hillier*, merely "rounds the noninteger values to integers in the resulting solution", and *does not include or is not even related to calculating an optimized supply chain plan*, as recited in independent Claim 8. (Page 513, Section 1).

In addition, the Examiner states that "*Hillier* was relied upon to disclose using approximated linear programming problems in the calculation of an *optimal solution*, based on constraints." (12 December 2006 Office Action, Page 17). (Emphasis Added). However, the "*optimal solution*" disclosed in *Hillier*, is not related to an "*optimized supply chain plan*", as recited in independent Claim 8. For example, "*calculat[ing] an optimized supply chain plan*" recited in independent Claim 8 is calculated *for the approximated linear programming problem* and describes a "quantity of items at each buffer for at least one time value of the corresponding time

variable and including a list of producers operable to supply the items to each buffer". Thus, *Hillier* cannot provide for **calculating an optimized supply chain plan**, since as discussed above, *Hillier* does not even provide for **approximating the linear programming problem**, in the first place. Accordingly, the Applicants respectfully submit that the equations forming the foundation of the Examiner's comparison between *Hillier* and independent Claim 8 cannot be made. The Applicants further respectfully submit that these distinctions alone are sufficient to patentably distinguish independent Claim 8 from *Hillier*.

The Office Action Fails to Properly Establish a *Prima Facie* case of Obvious over the Proposed *Kennedy-Hillier* Combination

The Applicants respectfully submit that the Office Action fails to properly establish a *prima facie* case of obviousness based on the proposed combination of *Kennedy* or *Hillier*, either individually or in combination. The Office Action has not shown the required teaching, suggestion, or motivation in these references or in knowledge generally available to those of ordinary skill in the art at the time of the invention to combine these references as proposed. The Office Action merely states that "it would be obvious to one of ordinary skill in the art at the time of the invention to use LP relation techniques (and branch and bound techniques)". (12 December 2006 Office Action, Page 6). The Applicants respectfully disagree.

The Applicants further respectfully submit that this purported advantage relied on by the Examiner is nowhere disclosed, taught, or suggested in *Kennedy* or *Hillier*, either individually or in combination. The Examiner asserts that the motivation to combine the references as proposed would be "in order to increase the ease of obtaining an optimal solution by creating a model that allows one to **divide and conquer** by dividing a large problem into its smaller subproblems and conquering these subproblems individually." (12 December 2006 Office Action, Page 6). (Emphasis Added). The Applicants respectfully disagree and further respectfully request clarification as to how the Examiner arrives at this conclusion. For example, how does "**divide and conquer**" provide for obtaining an optimal solution and to what extent does the Examiner purport that this "**divide and**

conquer" actually applies to the subject Application. ***The Applicants respectfully request the Examiner to point to the portions of Kennedy or Hillier which contain the teaching, suggestion, or motivation to combine these references for the Examiner's stated purported advantage***. The Applicants further respectfully submit that the Examiner is using the subject Application as a template to formulate reconstructive hindsight, which constitutes impermissible use of hindsight under 35 U.S.C. § 103(a).

In addition, the Examiner asserts that the motivation to combine the references as proposed is that *Kennedy* or *Hillier* are concerned with supplying limited resources among competing activities [...] is the best way possible." (12 December 2006 Office Action, Page 6). However, as the Examiner pointed out, "obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is ***some teaching, suggestion, or motivation to do so found either in the references themselves*** or in the knowledge generally available to one of ordinary skill in the art." (12 December 2006 Office Action, Page 6). (Emphasis Added). With respect to the subject Application, the Examiner has only asserted that the references are "concerned with supplying limited resources among competing activities". The Applicants respectfully submit, that even if this was true, which it is not, it is clearly not, there is still ***no teaching, suggestion, or motivation*** to combine or modify the teachings of either *Kennedy* or *Hillier* to establish a *prima facie* case of obviousness.

A recent Federal Circuit case makes it crystal clear that, in an obviousness situation, the ***prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art***. *In re Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002). (Emphasis Added). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id*. at 1434-35. With respect to the subject Application, the ***Examiner has not adequately supported the selection and combination of Kennedy or Hillier to render obvious the Applicants claimed invention***. The Examiner's conclusory statements that "it would be obvious to one of ordinary skill in the art at the time of the invention to use LP relation techniques (and branch and bound techniques)" and "in order to increase the ease of obtaining an optimal

solution by creating a model that allows one to *divide and conquer* by dividing a large problem into its smaller subproblems and conquering these subproblems individually", *does not adequately address the issue of motivation to combine*. (12 December 2006 Office Action, Page 6). This factual question of motivation is material to patentability, and cannot be resolved on subjective belief and unknown authority. *Id.* It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983). Thus, *the Office Action fails to provide proper motivation for combining the teachings of Kennedy or Hillier*, either individually or in combination.

The Applicants Claims are Patentable over the Proposed *Kennedy-Hillier* Combination

The Applicants respectfully submit that independent Claims 1, 15, 22, and 23 include limitations similar to those discussed above in connection with independent Claim 8. Thus, independent Claims 1, 8, 15, 22, and 23 are considered patentably distinguishable over *Kennedy* and *Hillier* for at least the reasons discussed above in connection with independent Claim 8.

With respect to dependent Claims 4-7, 11-14, 18-21, 25-29, 31-35, 37-41 and 43: Claims 4-7 and 25-29 depend from independent Claim 1; Claims 11-14 and 31-35 depend from independent Claim 8, Claims 18-21 and 37-41 depend from independent Claim 15; and Claim 43 depends from independent Claim 23. As mentioned above, each of independent Claims 1, 8, 15, 22, and 23 are considered patentably distinguishable over the proposed combination of *Kennedy* and *Hillier*. Thus, dependent Claims 4-7, 11-14, 18-21, 25-29, 31-35, 37-41 and 43 are considered to be in condition for allowance for at least the reason of depending from an allowable claim.

The Applicants respectfully submit that Claims 1, 4-8, 11-15, and 18-23, 25-29, 31-35, 37-41, and 43 are not rendered obvious by the proposed combination of *Kennedy* and *Hillier*. The Applicants further respectfully submit that Claims 1, 4-8, 11-15, and 18-23, 25-29, 31-35, 37-41, and 43 are in condition for allowance. Thus, the Applicants respectfully

request that the rejection of Claims 1, 4-8, 11-15, and 18-23, 25-29, 31-35, 37-41, and 43 under 35 U.S.C. § 103(a) be reconsidered and that Claims 1, 4-8, 11-15, and 18-23, 25-29, 31-35, 37-41, and 43 be allowed.

THE LEGAL STANDARD FOR OBVIOUSNESS REJECTIONS UNDER 35 U.S.C. § 103:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, *there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings*. Second, there must be a reasonable expectation of success. Finally, *the prior art reference* (or references when combined) *must teach or suggest all the claim limitations*. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, *and not based on applicant's disclosure*. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. Moreover, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); M.P.E.P. § 2143.03.

With respect to alleged obviousness, *there must be something in the prior art as a whole to suggest the desirability*, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. The consistent criterion for determining obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the

Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991; *In re O'Farrell*, 853 F.2d 894 (Fed. Cir. 1988); M.P.E.P. § 2142.

A recent Federal Circuit case makes it clear that, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35.

CONCLUSION:

In view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and early reconsideration and a Notice of Allowance are earnestly solicited.

Although the Applicants believe no fees are deemed to be necessary; the undersigned hereby authorizes the Commissioner to charge any additional fees which may be required, or credit any overpayments, to **Deposit Account No. 500777**. If an extension of time is necessary for allowing this Response to be timely filed, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) to the extent necessary. Any fee required for such Petition for Extension of Time should be charged to **Deposit Account No. 500777**.

Please link this application to Customer No. 53184 so that its status may be checked via the PAIR System.

Respectfully submitted,

12 March 2007   /Steven J. Laureanti/signed
Date   Steven J. Laureanti, Registration No. 50,274

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